

## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

**PCT****NOTIFICATION OF ELECTION**  
(PCT Rule 61.2)

Date of mailing (day/month/year) 02 November 2000 (02.11.00)	To:  Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE  in its capacity as elected Office
International application No. PCT/GB00/00729	Applicant's or agent's file reference P/61299/MAD
International filing date (day/month/year) 01 March 2000 (01.03.00)	Priority date (day/month/year) 01 March 1999 (01.03.99)
Applicant  BARTLETT, Christopher, Travers	

1. The designated Office is hereby notified of its election made:

 in the demand filed with the International Preliminary Examining Authority on:

11 September 2000 (11.09.00)

 in a notice effecting later election filed with the International Bureau on:

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2. The election
- 
- was

 was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  Juan Cruz  Telephone No.: (41-22) 338.83.38
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# PATENT COOPERATION TREATY

## PCT

REC'D 19 JUN 2001

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference  X61299	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No.  PCT/GB00/00729	International filing date (day/month/year)  01/03/2000	Priority date (day/month/year)  01/03/1999
International Patent Classification (IPC) or national classification and IPC  G06F3/00		
<p><b>Applicant</b>  BAE SYSTEMS ELECTRONICS LIMITED et al.</p>		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I    <input checked="" type="checkbox"/> Basis of the report</li> <li>II   <input type="checkbox"/> Priority</li> <li>III   <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV   <input type="checkbox"/> Lack of unity of invention</li> <li>V   <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI   <input type="checkbox"/> Certain documents cited</li> <li>VII   <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII   <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>		

Date of submission of the demand  11/09/2000	Date of completion of this report  15.06.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Alonso y Goicolea, L Telephone No. +49 89 2399 7475



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/00729

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-15                  as originally filed

**Claims, No.:**

1-17                  as originally filed

**Drawings, sheets:**

1/2-2/2              as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,        pages:
- the claims,           Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/00729

the drawings,        sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)              Yes: Claims 1-17  
                                No: Claims

Inventive step (IS)       Yes: Claims 1-17  
                                No: Claims

Industrial applicability (IA)   Yes: Claims 1-17  
                                No: Claims

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00729

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1 Reference is made to the following document:

D1: US-A-5 742 263 (O'HAGAN TIMOTHY P ET AL) 21 April 1998 (1998-04-21)

- 2 The application is concerned with a head tracker system operable to determine the user's head orientation and position relative to a fixed datum. The system comprising a set of optical sensors and a plurality of distinguishable markings.
- 3 A particular requirement of a head tracker used in critical situations is the high accuracy coupled with a fast dynamic response. These two requirements are often mutually exclusive.

Document D1 shows a head mounted display system including a frame that can be worn on a user's head wherein the frame supports a display and an optical system that projects an enlarged image of video information. The frame includes a barcode sensor for detecting one or more barcodes in the field of view thereof. The processor utilizes the decoded barcode values and locations to control the video information depicted on the display.

Although inherently fast enough, the accuracy of the optical systems of document D1 is constrained by the large amount of electronic processing required.

- 4 Claim 1 of the invention is distinguished from the content of D1 in that the subject matter of claim 1 introduces an optical correlator for optically correlating the optical image from the optical sensor with an optical image representative of at least one of the markings, and means for determining the orientation of the head mounting using the output from the optical correlator when it detects that there is correlation between the images.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00729

Unlike the known tracker systems which use electronic processing, the tracker system of the present invention has a dynamic response as a substantial part of the processing is carried out optically.

**Re Item VII**

**Certain defects in the international application**

- 1 Prior art document D1 is not acknowledged in the description (Rule 5.1(a) (ii) PCT), the description is to be in conformity with the claims (Rule 5.1(a) (iii) PCT).
- 2 Independent claim 15 is not drafted in the two part form (Rule 6.3(b) PCT) based on the closest prior art document.  
The preamble of claim 15 includes optical sensors which are well known in head tracker systems. (See for example document D1)

**Re Item VIII**

**Certain observations on the international application**

- 1 Although claims 1, 2 and 15 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, claims 1, 2 and 15 do not meet the requirements of Article 6 PCT.

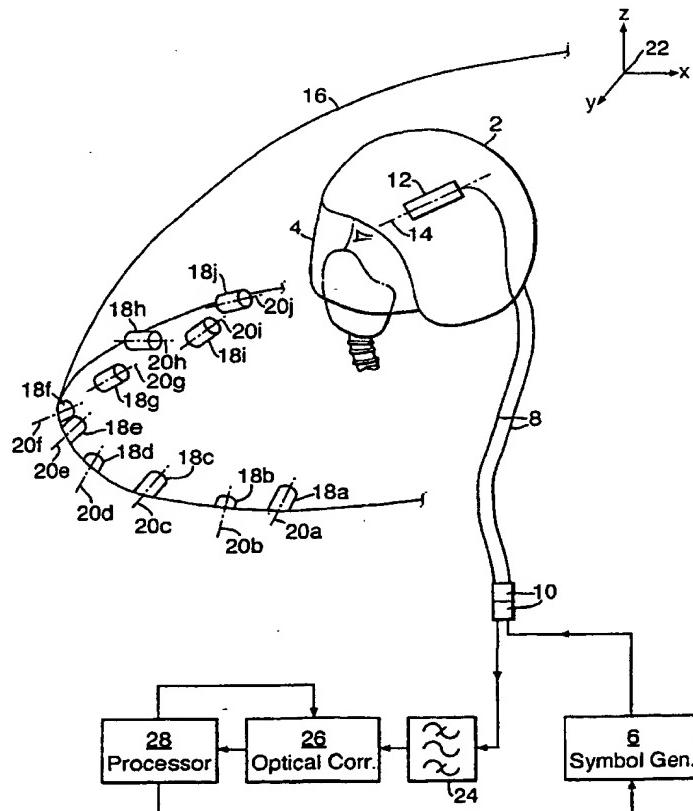
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> :	A1	(11) International Publication Number:	WO 00/52563
G06F 3/00, G06K 11/08, G09B 9/30, G02B 27/01		(43) International Publication Date:	8 September 2000 (08.09.00)
(21) International Application Number:	(81) Designated States: CA, IL, US, ZA, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).		
(22) International Filing Date:	1 March 2000 (01.03.00)		
(30) Priority Data:	9904669.0 9917582.0	1 March 1999 (01.03.99) 28 July 1999 (28.07.99)	GB GB
(71) Applicant (for all designated States except US):	BAE SYSTEMS ELECTRONICS LIMITED [GB/GB]; The Grove, Warren Lane, Stanmore, Middlesex HA7 4LY (GB).		
(72) Inventor; and			
(75) Inventor/Applicant (for US only):	BARTLETT, Christopher, Travers [GB/GB]; 83 Abingdon Road, Barming, Maidstone, Kent ME16 9EH (GB).		
(74) Agent:	BAE SYSTEMS PLC; Group IP Dept., Lancaster House, P.O. Box 87, Farnborough Aerospace Centre, Farnborough, Hampshire GU14 6YU (GB).		

## (54) Title: HEAD TRACKER SYSTEM

## (57) Abstract

A head tracker system for determining a user's head orientation relative to a datum (22) comprises: a head mounting (2) for attachment to the user's head; an optical sensor (12) which in use is located in fixed relation with a known fixed point relative to the head mounting (2) and a plurality of distinguishable markings (18a-18j) each of which when in use is located in fixed relation with a respective known point which is fixed relative to the datum (22). The head tracker further comprises an optical correlator (26) for optically correlating the optical image from the optical sensor (12) with an optical image representative of at least one of said markings (18a-18j); and means (28) for determining the orientation of the head mounting using the output from the optical correlator when it detects that there is correlation between the images.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
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CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
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DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P/61299/MAD</b>	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. <b>PCT/GB 00/00729</b>	International filing date (day/month/year) <b>01/03/2000</b>	(Earliest) Priority Date (day/month/year) <b>01/03/1999</b>
Applicant <b>BAE SYSTEMS ELECTRONICS LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  **Certain claims were found unsearchable** (See Box I).

3.  **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

**1**

None of the figures.

## INTERNATIONAL SEARCH REPORT

Inte...onal Application No  
PCT/GB 00/00729

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G06F3/00 G06K11/08 G09B9/30 G02B27/01

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G06F G06K G09B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 742 263 A (O'HAGAN TIMOTHY P ET AL) 21 April 1998 (1998-04-21) abstract column 1, line 1 -column 2, line 7 column 3, line 33 -column 4, line 24; figures 1,2	1,3,10, 15,17
A	EP 0 883 195 A (BARR & STROUD LTD) 9 December 1998 (1998-12-09) the whole document	2,5,6,15
A	US 4 956 794 A (HILSENRATH OLIVER ET AL) 11 September 1990 (1990-09-11) the whole document	2,3,10, 15

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the International filing date but later than the priority date claimed

- "T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

26 May 2000

Date of mailing of the International search report

05/06/2000

Name and mailing address of the ISA  
European Patent Office, P.B. 5018 Patentlaan 2  
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Authorized officer

Davenport, K

## INTERNATIONAL SEARCH REPORT

Int'l. Appl. No.

PCT/GB 00/00729

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 433 760 A (THOMSON CSF) 14 March 1980 (1980-03-14) page 1, line 1 -page 3, line 22 page 4, line 8 -page 5, line 16; figures 1,7 ---	2,3,10, 15
A	US 5 029 220 A (JUDAY RICHARD D) 2 July 1991 (1991-07-02) abstract column 1, line 1 -column 5, line 16; figure 1 -----	1,2,14, 15

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00729

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 5742263	A 21-04-1998	NONE		
EP 0883195	A 09-12-1998	ZA 9804350	A	30-11-1998
US 4956794	A 11-09-1990	IL 77610	A	25-01-1994
FR 2433760	A 14-03-1980	NONE		
US 5029220	A 02-07-1991	NONE		